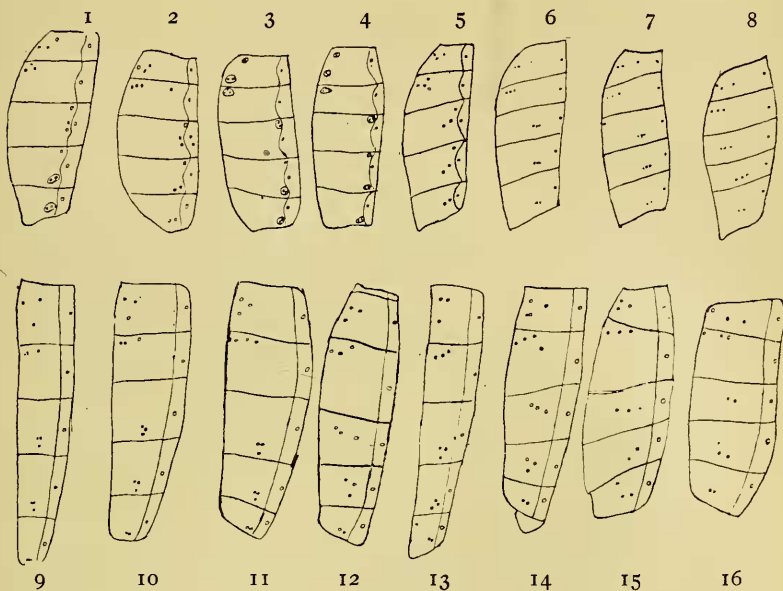


SYSTEMATIC NOTES ON HEMIPTERA HETEROPTERA.

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Some months ago I had occasion to examine carefully for comparative purposes certain structures in different orders of insects, and in the course of my work I found some features which have to my mind not received the recognition they are entitled to at the hands of systematic entomologists.

In classifying the Pentatomoidea, and especially the Cydnidæ, I found the arrangement of the spiracle and the two sensory punctures caudad of or adjacent to it of considerable importance, and have embodied my data in a paper already published. In making a more extended survey of the Heteroptera I was struck by the fact that the number and arrangement of the sensory punctures, each of which usually bears a long hair, differs in those families I have examined from that in Pentatomoidea and usually the subfamilies may be distinguished by means of the arrangement of the punctures. In Pentatomoidea there are, so far as I have seen, two punctures behind or adjacent to each spiracle, but in Coreidæ and Pyrrhocoridæ, the two families I have given most attention to, there are 3 punctures on sternites 2 to 5 and 2 on the sixth. In all cases in these two families the punctures on second and third segments are far removed from the spiracle, being much nearer to the ventro-median line than to the lateral margin. On the subfamily Alydinæ the arrangement of the punctures is almost the same in *Protenor*, *Darmistus*, *Esperanza* and *Leptocorisa*, and different from that in *Hyalymenus*, *Megalotomus*, *Alydus* and *Stachyocnemus*. Taking into consideration all the characters of the groups I consider that *Leptocorisa tipuloides* De Geer should be included in the tribe Micrelytrini along with *Protenor* and its allies, but whether the other species now linked with it in Leptocorisini should also be placed there I do not presume to say. The principal distinction between the tribes in so far as the arrangement of the sensory punctures is concerned lies in the position of those on the fourth sternite. In Micrelytrini the anterior two are close together, placed transversely, and considerably in front of third, though all are well distad of middle of sternite. In Alydini the punctures above re-



Pyrrhocoridae

Euryophthalminæ

- 1—*Euryophthalmus succinctus*
- 2—*Arhapha carolina*

Pyrrhocorinæ

- 3—*Pyrrhocoris apterus*
- 4—*Dysdercus suturellus*
- 5—*Stenomacra marginella*

Coreidae

Corizinae

- 6—*Harmostes reflexulus*
- 7—*Aufeius impresicollis*
- 8—*Corizus bohemani*

Alydinae

- 9—*Protenor belfragei*
- 10—*Darmistus subvittatus* Stål
- 11—*Esperanza texana*
- 12—*Hyalymenus tarsatus*
- 13—*Leptocoris tipuloides*
- 14—*Megalotomus 5-spinosus*
- 15—*Alydus eurinus*
- 16—*Stachyocnemus apicalis*

ferred to are at or before the middle of the sternite and are in a transverse or diagonal line.

In Pyrrhocoridae the genera *Largus* (= *Euryophthalmus*) and *Arhapha* agree very closely in the arrangement of the punctures. Both have those on fourth sternite in a straight or almost straight longitudinal series close to spiracle, the anterior one situated close to anterior margin of sternite and the posterior one behind middle of sternite. The genus *Stenomacra* (*marginella* H. S.) which is considered as belonging to the same subfamily differs in having the posterior two punctures placed almost transversely at middle of sternite, an arrangement similar to that on fifth, a feature which appears to suggest that the genus is out of place here. Both genera of Pyrrhocorinae known to me agree in having all three punctures on fourth sternite closely placed on an opaque spot near the anterior margin and almost in longitudinal line with the spiracle.

It is not to be expected that the character here referred to will enable one to formulate a scheme for the classification of tribes or larger categories, but it will I believe be found of value in most families as an additional character for the differentiation of these interesting insects.

There is in the collection of Illinois Natural History Survey a large series of specimens of *Aufeius impressicollis* Stål, most of the specimens being from Urbana, Champaign, and Decatur, Illinois. These agree in all particulars with Texan specimens taken by Mr. Hart.

In the same collection there are the following two species: *Harmostes prolixus* Stål, two specimens, Brownsville, Texas (Hart). This species is new to the United States. *Esperanza texana* Barber, 3 males, 3 females, Brownsville, Texas (Hart).

Since sending this paper to the editor I have seen a much more comprehensive one on the same subject by Tullgren in Entomologisk Tidskrift, Heft 2, 1918, pages 113-132, a copy of which has just come to hand here. As this author considers the sensory or "auditory" hairs to be of very much more importance than previous authors have it is necessary that his data and conclusions be seriously considered by hemipterists in this country especially in connection with the major groupings in Heteroptera.